

WHAT IS CLAIMED IS:

1. An energy delivery device for use with a medical treatment system, wherein the energy delivery device comprises:
  - 5 An optical fiber;  
A memory device, said memory device having data programmed therein, said data being specifically associated with the energy self-absorption properties of said optical fiber;  
Wherein said optical fiber and said memory device are operatively connected to the medical treatment system during use of said medical treatment system.
  - 10 2. An energy delivery device according to claim 1, wherein said data includes a calibration parameter.
  3. An energy delivery device according to claim 2, wherein said calibration parameter is indicative of a self-heating characteristic of said optical fiber.
  4. An energy delivery device according to claim 3, wherein said self-heating characteristic  
15 is associated with a power level.
  5. An energy delivery device according to claim 3, wherein said self-heating characteristic is a function of a power level.
  6. An energy delivery device according to claim 5, wherein said function is modeled by an equation.
  - 20 7. An energy delivery device according to claim 6, wherein said equation is a linear equation.
  8. An energy delivery device according to claim 3, further comprising a connector wherein said optical fiber and said memory device are attached to said connector.
  9. An energy delivery device according to claim 8, wherein said optical fiber has a proximal  
25 end and a distal end, said distal end comprising a penetrating tip.
  10. An energy delivery device according to claim 9, wherein said optical fiber further comprises a light-diffusing section located adjacent said distal end.
  11. An energy delivery device according to claim 10, further comprising a temperature sensor adjacent said light-diffusing section.
  - 30 12. An energy delivery device according to claim 11, wherein said temperature sensor includes alexandrite particles.

13. A memory device for use with an energy delivery device in combination with an optical fiber, wherein said memory device comprises:

An electronic erasable programmable read-only memory chip residing on a printed circuit board, said electronic erasable programmable read-only memory chip having data programmed therein, said data including a calibration parameter that is specifically associated with the energy self-absorption properties of said optical fiber.

5 14. A memory device according to claim 13, wherein said calibration parameter is indicative of a self-heating characteristic of said optical fiber.

10 15. A method of producing an energy delivery device for the treatment of human tissue wherein the energy delivery device includes a memory device, said method comprising the steps of:

(i) measuring at least one self-heating characteristic;

(ii) determining one or more calibration parameter indicative of said self-heating characteristic; and

15 (iii) storing said calibration parameter in said memory device.

16. A method of producing an energy delivery device for the treatment of human tissue according to claim 15, further comprising the steps of:

(i) reading said calibration parameter from said memory device;

(ii) setting a power level for the energy delivery device;

20 (iii) reading a measured temperature;

(iv) calculating a corrected temperature value using said calibration parameter and said measured temperature; and

(v) adjusting said power level in response to said corrected temperature value.

17. A method of producing an energy delivery device for the treatment of human tissue according to claim 15, further comprising an optical fiber and wherein said self-heating characteristic is associated with said optical fiber.

25 18. A method of producing an energy delivery device for the treatment of human tissue according to claim 17, wherein said optical fiber has a distal end, and further comprising the steps of:

30 (i) reading said calibration parameter from said memory device;

(ii) setting a power level for the energy delivery device;

- (iii) reading a measured temperature taken at said distal end of the optical fiber;
- (iv) calculating a corrected temperature value using said calibration parameter and said measured temperature; and
- (v) adjusting said power level in response to said corrected temperature value.

5    19. A method of producing an energy delivery device for the treatment of human tissue according to claim 17, wherein said calibration parameter is derived from the self-heating characteristic of said optical fiber.

20. A method of producing an energy delivery device for the treatment of human tissue according to claim 17, wherein said self-heating characteristic results from the energy self-  
10 absorption properties of said optical fiber.

21. A method of producing an energy delivery device for the treatment of human tissue wherein the energy delivery device includes a memory device, said method comprising the steps of:

- (i) measuring at least one self-heating characteristic;
- (ii) determining one or more calibration parameter indicative of said self-heating characteristic;
- (iii) storing said calibration parameter in said memory device;
- (iv) reading said calibration parameter from said memory device;
- (v) setting a power level for the energy delivery device;
- 20 (vi) reading a measured temperature;
- (vii) calculating a corrected temperature value using said calibration parameter and said measured temperature; and
- (viii) adjusting said power level in response to said corrected temperature value.